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AMENDMENTS TO THE CLAIMS:

This listing of the claims will replace all prior versions, and listings, of the claims in this application.

Please cancel claims 14, 19, and 20 without prejudice.

Listing of Claims:

1. (Previously Presented) A method for performing an interference estimation in a spread spectrum system using a plurality of spreading codes with different code lengths, comprising the steps of:

a) receiving a spread spectrum signal;

b) generating a despread sample signal by averaging over a predetermined code period over which said plurality of spreading codes are orthogonal;

c) calculating a variance estimate based on said despread sample signal; wherein said variance estimate is calculated by:

integrating said despread sample signal over a spreading code length of said received spread spectrum signal;

integrating a signal corresponding to a power of said despread sample signal over said plurality of spreading code lengths; and

subtracting a signal obtained by squaring an output signal of said integration of said despread sample signal from an output signal of said integration of the signal corresponding to the power of said despread signal.

2. (Previously Presented) The method according to claim 1, wherein said variance estimate is calculated by averaging said despread sample signal over a spreading code length of said received spread spectrum signal.

3. (Previously Presented) The method according to claim 1, wherein said predetermined code period corresponds to the length of the shortest code of said plurality of spreading codes.

4. (Canceled)

5. (Previously Presented) A method for performing an interference estimation in a spread spectrum system using a plurality of spreading codes with different code lengths, comprising the steps of:

a) receiving a spread spectrum signal;

b) generating a despread sample signal by averaging over a predetermined code period over which said plurality of spreading codes are orthogonal; and

c) calculating a variance estimate based on said despread sample signal;

wherein said variance estimate is a minimum variance unbiased (MVU), calculated in accordance with a relationship:

$$\hat{\sigma}^2 = E(|X|^2) - |E(X)|^2;$$

wherein $\hat{\sigma}^2$ denotes said variance estimate for a symbol i of said received spread spectrum signal, X denotes said despread sample signal, E(X) denotes an expectation value for said despread sample signal, and $E(|X|^2)$ denotes a mean power of said despread sample signal; and

wherein said despread sample signal is generated based on a relationship:

$$X(n) = \frac{1}{m} \sum_{k=1}^{m} r(k);$$

wherein m denotes a number of chips of said predetermined code period, k denotes a chip index of a spreading code of said received spread spectrum signal, r(k) denotes a value of a signal,

obtained by removing said spreading code from said received spread spectrum signal, at said chip index k, and X(n) denotes the value of said despread sample signal at a sample index n.

6. (Previously Presented) A method for performing an interference estimation in a spread spectrum system using a plurality of spreading codes with different code lengths, comprising the steps of:

a) receiving a spread spectrum signal;

b) generating a despread sample signal by averaging over a predetermined code period over which said plurality of spreading codes are orthogonal; and

c) calculating a variance estimate based on said despread sample signal;

wherein said variance estimate is a minimum variance unbiased (MVU), calculated in accordance with a relationship:

$$\hat{\sigma}^2 = E(|X|^2) - |E(X)|^2;$$

wherein $\hat{\sigma}^2$ denotes said variance estimate for a symbol i of said received spread spectrum signal, X denotes said despread sample signal, E(X) denotes an expectation value for said despread sample signal, and $E(|X|^2)$ denotes a mean power of said despread sample signal; and

wherein said expectation value is obtained based on a relationship:

$$E(X) = \frac{1}{c/m} \sum_{n=1}^{c/m} X(n);$$

wherein c denotes a spreading code length of said received spread spectrum signal, m denotes a number of chips of said predetermined code period, n denotes a sample index of said despread sample signal, and X(n) denotes a value of said despread sample signal at the sample index n.

7. (Previously Presented) A method for performing an interference estimation in a spread spectrum system using a plurality of spreading codes with different code lengths, comprising the steps of:

a) receiving a spread spectrum signal;

b) generating a despread sample signal by averaging over a predetermined code period over which said plurality of spreading codes are orthogonal; and

c) calculating a variance estimate based on said despread sample signal;

wherein said variance estimate is a minimum variance unbiased (MVU), calculated in accordance with a relationship:

$$\hat{\sigma}^2 = E(|X|^2) - |E(X)|^2;$$

wherein $\hat{\sigma}^2$ denotes said variance estimate for a symbol i of said received spread spectrum signal, X denotes said despread sample signal, E(X) denotes an expectation value for said despread sample signal, and $E(|X|^2)$ denotes a mean power of said despread sample signal; and

wherein said mean power of said despread sample signal is obtained based on a relationship:

$$E(|X|^2) = \frac{1}{c/m}\sum_{n=1}^{c/m}|X(n)|^2;$$

wherein c denotes a spreading code length of said received spread spectrum signal, m denotes a number of chips of said predetermined code period, n denotes a sample index of said despread sample signal, and X(n) denotes a value of said despread sample signal at the sample index n.

8. (Previously Presented) A method for performing an interference estimation in a spread spectrum system using a plurality of spreading codes with different code lengths, comprising the steps of:

a) receiving a spread spectrum signal;

b) generating a despread sample signal by averaging over a predetermined code period over which said plurality of spreading codes are orthogonal; and

c) calculating a variance estimate based on said despread sample signal;

wherein said variance estimate is a minimum variance unbiased (MVU), calculated in accordance with a relationship:

$$\hat{\sigma}^2 = E(|X|^2) - |E(X)|^2;$$

wherein $\hat{\sigma}^2$ denotes said variance estimate for a symbol i of said received spread spectrum signal, X denotes said despread sample signal, E(X) denotes an expectation value for said despread sample signal, and $E(|X|^2)$ denotes a mean power of said despread sample signal; and

wherein the interference estimate is obtained based on a relationship:

$$\hat{I} = m\frac{c+m}{c}\cdot\frac{1}{N}\sum_{i=1}^{N} I(i);$$

wherein $\hat{I}$ denotes said interference estimate, m denotes a number of chips of said predetermined code period, N denotes a number of averaged symbols of said received spread spectrum signal, for which said variance estimation is performed.

9. (Previously Presented) The method according to claim 1, wherein said spread spectrum system is a WCDMA system.

10. (Currently Amended) An apparatus for performing an interference estimation in a spread spectrum system using a plurality of spreading codes with different code lengths comprising:

a) receiving means for receiving a spread spectrum signal;

b) sampling means for generating a despread sample signal by averaging over a predetermined code period over which said plurality of spreading codes are orthogonal; and

c) estimation means for obtaining a variance estimate based on said despread sample signal;

wherein said estimation means comprises a first integration means for integrating said despread sample signal over a spreading code length of said received spread spectrum signal, a second integration means for integrating a signal corresponding to a power of said despread sample signal over said spreading code length, and subtracting means for subtracting a signal obtained by squaring an output signal of said first integrating means from an output signal of said second integrating means, <u>wherein said estimation means comprises an averaging means for averaging an output signal of said subtracting means over a predetermined number of symbols of said received spread spectrum signal</u>.

11. (Previously Presented) The apparatus according to claim 10, wherein said predetermined code period corresponds to a length of a shortest spreading code of said plurality of spreading codes.

12. (Previously Presented) The apparatus according to claim 10, wherein said sampling means comprises an integrating means for integrating a signal, obtained by removing a spreading code from said received spread spectrum signal, over said predetermined code period.

13. (Canceled)

14. (Canceled).

15. (Currently Amended) The apparatus according to claim <u>10</u> ~~14~~, wherein said averaging means comprises an integrating means.

16. (Currently Amended) The apparatus according to claim <u>10</u> ~~14~~, wherein said averaging means comprises a digital filter.

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17. (Previously Presented) The apparatus according to claim 10, wherein said interference estimation apparatus is an SIR estimator used for performing power control in a spread spectrum transceiver.

18. (Previously Presented) The apparatus according to claim 10, wherein said spread spectrum system is a WCDMA system.

19. (Canceled).

20. (Canceled).

21. (Canceled)

22. (Previously Presented) The method according to claim 2, wherein said variance estimate is a minimum variance unbiased (MVU), calculated in accordance with a relationship:

$$\hat{\sigma}^2 = E(|X|^2) - |E(X)|^2;$$

wherein $\hat{\sigma}^2$ denotes said variance estimate for a symbol i of said received spread spectrum signal, X denotes said despread sample signal, E(X) denotes an expectation value for said despread sample signal, and $E(|X|^2)$ denotes a mean power of said despread samples signal.

23. (Previously Presented) The method according to claim 3, wherein said variance estimate is a minimum variance unbiased (MVU), calculated in accordance with a relationship:

$$\hat{\sigma}^2 = E(|X|^2) - |E(X)|^2;$$

wherein $\hat{\sigma}^2$ denotes said variance estimate for a symbol i of said received spread spectrum signal, X denotes said despread sample signal, E(X) denotes an expectation value for said despread sample signal, and $E(|X|^2)$ denotes a mean power of said despread samples signal.

24. (Previously Presented) The method according to claim 5, wherein said expectation value is obtained based on a relationship:

$$E(X) = \frac{1}{c/m} \sum_{n=1}^{c/m} X(n);$$

wherein c denotes a spreading code length of said received spread spectrum signal, m denotes a number of chips of said predetermined code period, n denotes a sample index of said despread sample signal, and X(n) denotes a value of said despread sample signal at the sample index n.

25. (Previously Presented) The method according to claim 5, wherein said mean power of said despread sample signal is obtained based on a relationship:

$$E(|X|^2) = \frac{1}{c/m} \sum_{n=1}^{c/m} |X(n)|^2;$$

wherein c denotes a spreading code length of said received spread spectrum signal, m denotes a number of chips of said predetermined code period, n denotes a sample index of said despread sample signal, and X(n) denotes a value of said despread sample signal at the sample index n.

26. (Previously Presented) The method according to claim 6, wherein said mean power of said despread sample signal is obtained based on a relationship:

$$E(|X|^2) = \frac{1}{c/m} \sum_{n=1}^{c/m} |X(n)|^2;$$

wherein c denotes a spreading code length of said received spread spectrum signal, m denotes a number of chips of said predetermined code period, n denotes a sample index of said despread sample signal, and X(n) denotes a value of said despread sample signal at the sample index n.

27. (Previously Presented) The method according to claim 5, wherein the interference estimate is obtained based on a relationship:

$$\hat{I} = m\frac{c+m}{c}\cdot\frac{1}{N}\sum_{i=1}^{N} I(i);$$

wherein $\hat{I}$ denotes said interference estimate, m denotes a number of chips of said predetermined code period, N denotes a number of averaged symbols of said received spread spectrum signal, for which said variance estimation is performed.

28. (Previously Presented) The method according to claim 6, wherein the interference estimate is obtained based on a relationship:

$$\hat{I} = m\frac{c+m}{c}\cdot\frac{1}{N}\sum_{i=1}^{N} I(i);$$

wherein $\hat{I}$ denotes said interference estimate, m denotes a number of chips of said predetermined code period, N denotes a number of averaged symbols of said received spread spectrum signal, for which said variance estimation is performed.

29. (Previously Presented) The method according to claim 7, wherein the interference estimate is obtained based on a relationship:

$$\hat{I} = m\frac{c+m}{c}\cdot\frac{1}{N}\sum_{i=1}^{N} I(i);$$

wherein $\hat{I}$ denotes said interference estimate, m denotes a number of chips of said predetermined code period, N denotes a number of averaged symbols of said received spread spectrum signal, for which said variance estimation is performed.

30. (Previously Presented) The method according to claim 2, wherein said spread spectrum system is a WCDMA system.

31. (Previously Presented) The method according to claim 3, wherein said spread spectrum system is a WCDMA system.

32. (Canceled)

33. (Previously Presented) The method according to claim 5, wherein said spread spectrum system is a WCDMA system.

34. (Previously Presented) The method according to claim 6, wherein said spread spectrum system is a WCDMA system.

35. (Previously Presented) The method according to claim 7, wherein said spread spectrum system is a WCDMA system.

36. (Previously Presented) The method according to claim 8, wherein said spread spectrum system is a WCDMA system.

37. (Previously Presented) The apparatus according to claim 11, wherein said sampling mean comprises an integrating means for integrating a signal, obtained by removing a spreading code from said received spread spectrum signal, over said predetermined code period.

38. (Previously Presented) The apparatus according to claim 11, wherein said estimation means comprises a first integration means for integrating said despread sample signal over a spreading code length of said received spread spectrum signal, a second integration means for integrating a signal corresponding to a power of said despread sample signal over said spreading code length, and subtracting means for subtracting a signal obtained by squaring an output signal of said first integrating in cans from an output signal of said second integrating means.

39. (Previously Presented) The apparatus according to claim 12. wherein said estimation means comprises a first integration means for integrating said despread sample signal over a spreading code length of said received spread spectrum signal, a second integration means for integrating a signal corresponding to a power of said despread sample signal over said spreading code length, and subtracting means for subtracting a signal obtained by squaring an output signal of said first integrating means from an output signal of said second integrating means.

40. (Previously Presented) The apparatus according to claim 11, wherein said estimation means comprises an averaging means for averaging an output signal of said subtracting means

over a predetermined number of symbols of said received spread spectrum signal.

41. (Previously Presented) The apparatus according to claim 12, wherein said estimation means comprises an averaging means for averaging an output signal of said subtracting means over a predetermined number of symbols of said received spread spectrum signal.

42. (Canceled)

43. (Previously Presented) The apparatus according to claim 11, wherein said interference estimation apparatus is an SIR estimator for performing power control in a spread spectrum transceiver.

44. (Previously Presented) The apparatus according to claim 12, wherein said interference estimation apparatus is an SIR estimator for performing power control in a spread spectrum transceiver.

45. (Canceled)

46. (Currently Amended) The apparatus according to claim <u>10</u> ~~14~~, wherein said interference estimation apparatus is an SIR estimator for performing power control in a spread spectrum transceiver.

47. (Previously Presented) The apparatus according to claim 15, wherein said interference estimation apparatus is an SIR estimator for performing power control in a spread spectrum transceiver.

48. (Previously Presented) The apparatus according to claim 16, wherein said interference estimation apparatus is an SIR estimator for performing power control in a spread spectrum transceiver.

49. (Previously Presented) The apparatus according to claim 11, wherein said spread spectrum system is a WCDMA system.

50. (Previously Presented) The apparatus according to claim 12, wherein said spread spectrum system is a WCDMA system.

51. (Canceled)

52. (Currently Amended) The apparatus according to claim <u>10</u> ~~14~~, wherein said spread spectrum system is a WCDMA system.

53. (Previously Presented) The apparatus according to claim 15, wherein said spread spectrum system is a WCDMA system.

54. (Currently Amended) The apparatus according to claim~~s~~ 16, wherein said spread spectrum system is a WCDMA system.

55. (Currently Amended) The apparatus according to claim~~s~~ 17, wherein said spread spectrum system is a WCDMA system.